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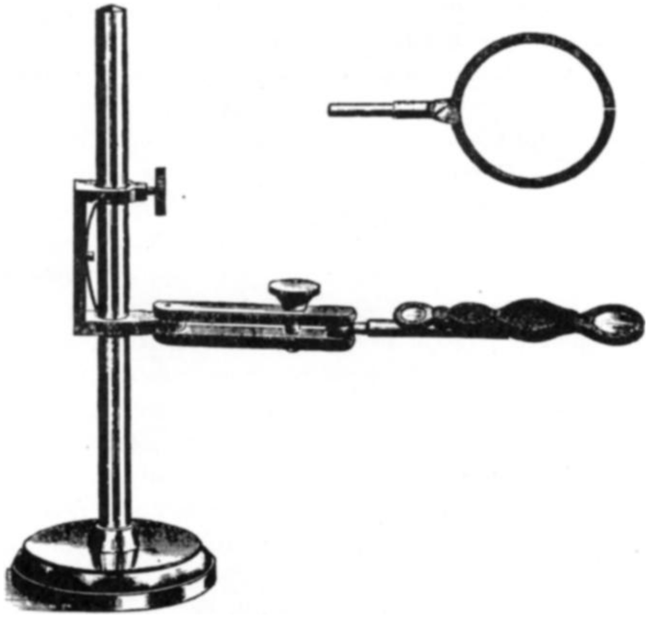
NEW LENS-HOLDER.

By R. H. Ward, M. D., F. R. M. S., Troy, N. Y.

The large, heavy doublets sold as " engravers' glasses " have been used with great satisfaction in the preliminary examination of herbarium specimens or of handwriting; in the selection from among large masses of material, as of fabrics or mixed fibers or other substances supposed to contain inequalities or adulterations, the portions requiring further investigation, and in performing under the lenses such manipulations or dissections as require only a low amplification. For these purposes and many others the lens-holders in



use are quite inadequate, being too light to carry the large lenses and too short-armed for the convenient study of handwriting upon large sheets of paper or mounted herbarium specimens, or else too unstable for use with higher powers. The writer has, therefore, been led to devise and employ a form, arranged somewhat like the stands used by engravers, which (unlike them) is sufficiently firm and manageable for either large or small magnifiers of low or high powers, and is available for an arm-length of 20 to 25^{cm}. It consists, as shown in the figure, of a rectangular frame which slips over the pillar of a bull's-eye stand, both it and the bull's-eye being best mounted upon the same stand for the sake of simplifying the apparatus, and because they are often advantageously used in combination. The frame slides smoothly up and down the pillar, being held in any position by an included spring. To an extension of the bottom of the frame is attached a horizontal arm, having first a horizontal pivot joint, and, secondly, a ball-and-socket joint, the tension of these being readily adjustable by means of a screw with a large milled head. By bending the joints, the lens may be brought near the pillar for use in connection with the bull's-eye ; or by attaching the jaws or ring to a longer wire, the total arm-length may be increased at will.

At the end of the arm rises a vertical pivot upon which can be slipped almost any kind of pocket magnifier, such as a Coddington or achromatic triplet (which, on account of its long working focus and broad, clearly defined and well-lighted field of view, may be considered rather a necessity than a luxury), or a bellows-shaped arrangement more or less like that shown *in situ* on the arm. Or, the lenses being removed, a split wire may be inserted into the hollow end of the arm, bearing a pair of hinged semi-circular jaws, shown in the figure, for carrying an engraver's glass or any variety of large lenses not requiring delicate adjustment. For magnifiers of higher power, requiring more precise adjustment, a ring is substituted for the jaws.

There is a fine adjustment at the top of the rectangular frame, where a screw with milled head, pressing the pillar against the spring, promptly but steadily depresses the lenses to the extent of about four times its own motion.

This apparatus was made for me by the Bausch & Lomb Optical Company, of Rochester. When supplied with suitable lenses and kept standing always ready upon the table, it becomes constantly useful even to persons well supplied with elaborate apparatus. If transmitted light be required, the objects are placed upon the stage of any dissecting microscope that may be within reach. By turning the jaws or ring into a vertical position, it is well adapted to the examination of living organisms in a glass jar or aquarium; for which purpose powers of 50 to 100 diameters may become available by using the Brücke magnifier or the Bausch & Lomb compound dissecting magnifier, which for this use should be screwed, not slipped, into the ring.